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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/923,583	08/07/2001	Gabriel Fielding	83065PCW	2714

7590 09/30/2005

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EXAMINER

PATEL, SHEFALI D

ART UNIT	PAPER NUMBER
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2621

DATE MAILED: 09/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/923,583	<b>Applicant(s)</b> FIELDING ET AL.	
	<b>Examiner</b> Shefali D. Patel	<b>Art Unit</b> 2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2005.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 31, 2005 has been entered.

### *Response to Amendment*

2. The amendment was filed on July 26, 2005.
3. Claims 1-18 are pending in this application.

### *Response to Arguments*

4. Applicant's arguments with respect to claims 1-2, 8-11 and 17-18 (Remarks on pages 5-7) have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-2, 8-11, and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maes et al. (hereinafter, "Maes") (US 6,625,298) in view of Cox (US 6,069,914).

With regard to claim 1 Maes discloses a method for extracting a watermark signal contained in a watermarked digital image sequence, having two or more frames (Figure 2, col. 4 lines 36-41) *represented by pixel values, wherein the watermark is extracted without using frames from an original unwatermarked digital image sequence*, comprising the steps of: a) estimating *pixel* correspondences (i.e.,

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comparison) between one or more pairs of frames in the watermarked digital image sequence (comparing means 202 estimating correspondence between the input signal 201 and an original input signal 204, col. 4 lines 42-43. Note, this is done on frame-by-frame basis, col. 4 lines 45-46. Individual pixels are being estimated as the entire image itself if estimated.); b) computing a displaced frame difference for one or more frames in the watermarked digital image sequence using the *pixel* correspondences computed in step a) (obtain the difference based on the correspondence at col. 4 lines 43-53); and c) extracting the watermark signal from one or more displaced frame differences (See, col. 4 lines 54-60). Maes does not expressly disclose the watermark being extracted without using frames from an original unwatermarked digital image sequence. Cox discloses this in his entire reference (specifically in the abstract and col. 5 lines 1-44 and col. 6 lines 17-26. Maes and Cox are combinable because they are from the same field of endeavor, i.e., embedding and extracting watermark. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Cox with Maes. The motivation for doing so is to allow software and hardware devices to directly read embedded signals. Also, this allows a third party device providers desiring to read embedded information for operation or denying operation of such a device by requiring no original image or original image spectrum when there is not one available as suggested by Cox at col. 1 lines 45-68. Therefore, it would have been obvious to combine Cox with Maes to obtain the invention as specified in claim 1. Please note that Cox discloses the method and a system being applicable to signals for image data, images, video, multimedia data and the term image as disclosed at col. 3 lines 13-24. Therefore, it would have been obvious to combine Cox's invention with Maes to obtain the invention specified in claim 1 as Maes discloses watermarking method and system for a signal in general.

With regard to **claim 2** Maes discloses the displaced frame difference is computed by forming an estimated frame (estimated frame are represented as "missing" frames or frames that occurs twice at col.

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4 lines 46-51) and subtracting the estimated frame from the corresponding frame in the watermarked digital image sequence as discloses at col. 4 lines 42-67.

With regard to **claims 8-9** Maes discloses computing displaced frame difference for each frame by using the correspondence with one, two, or more additional frames in the watermarked digital image sequence (note the use of word frame(s). See, col. 4 lines 45-53).

**Claim 10** recites identical features as claim 1. Thus, arguments similar to that presented above for claim 1 is equally applicable to claim 10.

**Claim 11** recites identical features as claim 2. Thus, arguments similar to that presented above for claim 2 is equally applicable to claim 11.

**Claims 17-18** recites identical features as claims 8-9. Thus, arguments similar to that presented above for claims 8-9 is equally applicable to claims 17-18.

7. Claims 3 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maes (US 6,625,298) in view of Cox (US 6,069,914 as applied to claims 1-2, 8-11, and 17-18 above, and further in view of Albert et al. (hereinafter, "Albert") (US 6,473,698).

With regard to **claim 3** Maes (modified by Cox) discloses all of the claimed subject matter as already discussed above in claim 1 and the arguments are not repeated herein, but are incorporated by reference. Maes discloses estimating correspondence between image frames and obtaining differences between the input frame (i.e., current frame) and the original frame (i.e., previous frame). Maes does not expressly disclose estimating using gradient-based optical flow. Since Maes discloses comparing current frame to the previous frame and obtaining the difference (by subtraction) between the frames, it is obvious that the gradient method is being used (emphasis added). Moreover, Albert discloses this at col. 3 lines 50-65. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Albert with Maes and Cox. The motivation for doing so is to identify

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portions of the object in the image as disclosed by Albert. Therefore, it would have been obvious to combine Albert with Maes and Cox to obtain the invention as specified in claim 3.

**Claim 12** recites identical features as claim 3. Thus, arguments similar to that presented above for claim 3 is equally applicable to claim 12.

8. Claims 4-7 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maes (US 6,625,298) in view of Cox (US 6,069,914 as applied to claims 1-2, 8-11, and 17-18 above, and further in view of Conover et al. (hereinafter, "Conover") (US 6,373,960).

With regard to **claim 4** Maes (modified by Cox) discloses all of the claimed subject matter as already discussed above in claim 1 and the arguments are not repeated herein, but are incorporated by reference. Maes discloses estimating correspondence between image frames. Maes does not expressly disclose correspondences estimated using block-based matching. Conover discloses correspondences estimation using block-based matching at col. 9 lines 63 to col. 10 line 5. Maes, Cox and Conover are combinable because they are from the same field of endeavor, i.e., embedding/extracting watermark. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Conover with Maes and Cox. The motivation for doing so is to have watermark decoded propagate both spatially and temporally throughout the frames as suggested by Conover. Therefore, it would have been obvious to combine Conover with Maes and Cox to obtain the invention as specified in claim 4.

With regard to **claim 5** Conover discloses correspondence estimation using layered motion estimation (Conover is using video data in which frames are layered. See, col. 9 lines 55 to col. 10 line 5).

With regard to **claim 6** Conover discloses correspondence estimation using parametric region-based motion estimation (comparing coefficients at col. 14 lines 12-28).

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With regard to **claim 7** Conover discloses compressed image stream (col. 7 lines 38-42) and at least a portion of the correspondences are estimated from motion vectors (col. 9 lines 55 to col. 10 line 5).

**Claim 13** recites identical features as claim 4. Thus, arguments similar to that presented above for claim 4 is equally applicable to claim 13.

**Claim 14** recites identical features as claim 5. Thus, arguments similar to that presented above for claim 5 is equally applicable to claim 14.

**Claim 15** recites identical features as claim 6. Thus, arguments similar to that presented above for claim 6 is equally applicable to claim 15.

**Claim 16** recites identical features as claim 7. Thus, arguments similar to that presented above for claim 7 is equally applicable to claim 16.

#### *Conclusion*

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 6,738,493 – Robust Digital Watermarking, see col. 1-2.

US 6,934,403 – Robust Blind Watermarking Method in Wavelet DC Components.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shefali D. Patel whose telephone number is 571-272-7396. The examiner can normally be reached on M-F 8:00am - 5:00pm (First Friday Off).

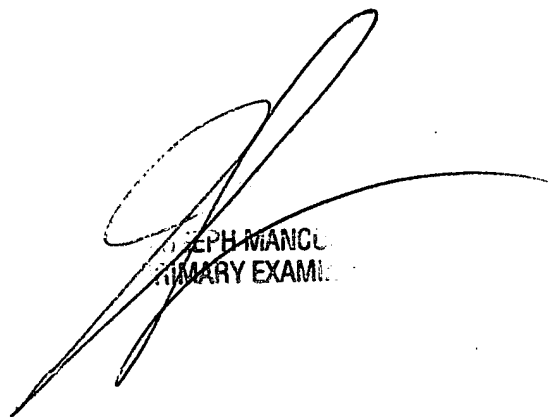
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on (571) 272-7695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Shefali D Patel  
Examiner  
Art Unit 2621

September 19, 2005

  
JOSEPH MANCUSO  
PRIMARY EXAMINER